Using Web Based Background Layers—WMS Layers

Starting at ADMS version 7.0.0 there is added functionality to give users access to web based background imagery. In order to use these options, the computer must have an active internet connection. In order to use these maps the software must connect to a WMS (Web Map Service) Server. Once the connection is made a georeferenced background is returned to be viewed in the Map Window.

There are two main types of WMS layers that are handled in ADMS.

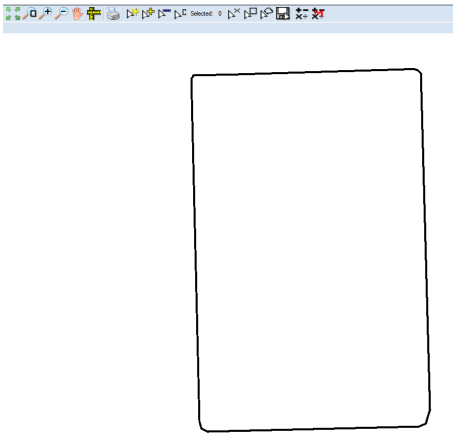
1. Built in ADMS WMS links
   - These links will be standard within the software. The user has no ability to change, add, or remove them. Examples would be Google & Bing Maps and cover a bigger geography including the United States and Canada.

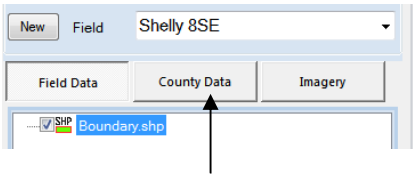
1. Local/Specialty WMS links
   - These are WMS links that the software user can change, or may have special access to. Often will be contained to a specific state, or region. These links will be stored in the county data folder/data tree.

Using WMS Servers

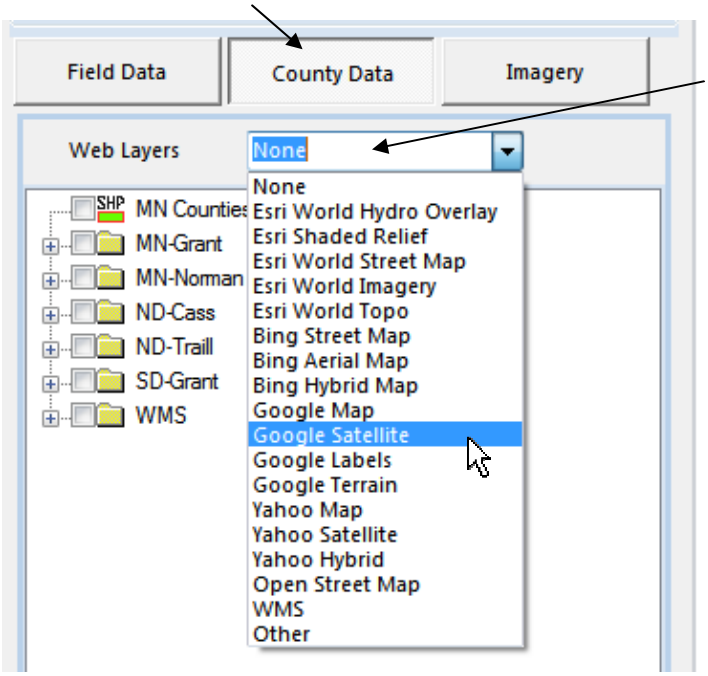
ADMS WMS links:

1. Turn on a layer to be used as reference layer. This will bring ADMS to the field level instead of loading the entire country. (e.g., boundary or surface of the field)





2. Select the “County Data” button



3. From the “Web Layers” dropdown there will be a list of available layers to select.

4. Select on the layer to be used as the background image. After the desired layer is selected from the list it will load in the back of layer that’s turned on.

**Note: If a different image is turned on before the WMS layer gets selected the WMS layer may not be visible. The WMS layer will default to go to the back of all layers turned on in the map.*

Example of Google Satellite as background

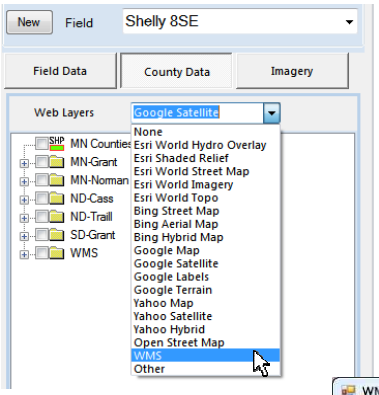
Using Web Based Background Layers—WMS Layers

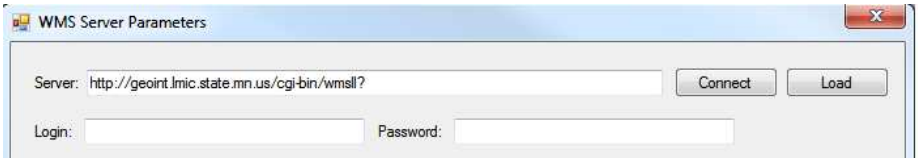
Using WMS Servers

Finding WMS Links:
The easiest way to find new WMS links is by simply searching the web for them. They may not be available for all areas.

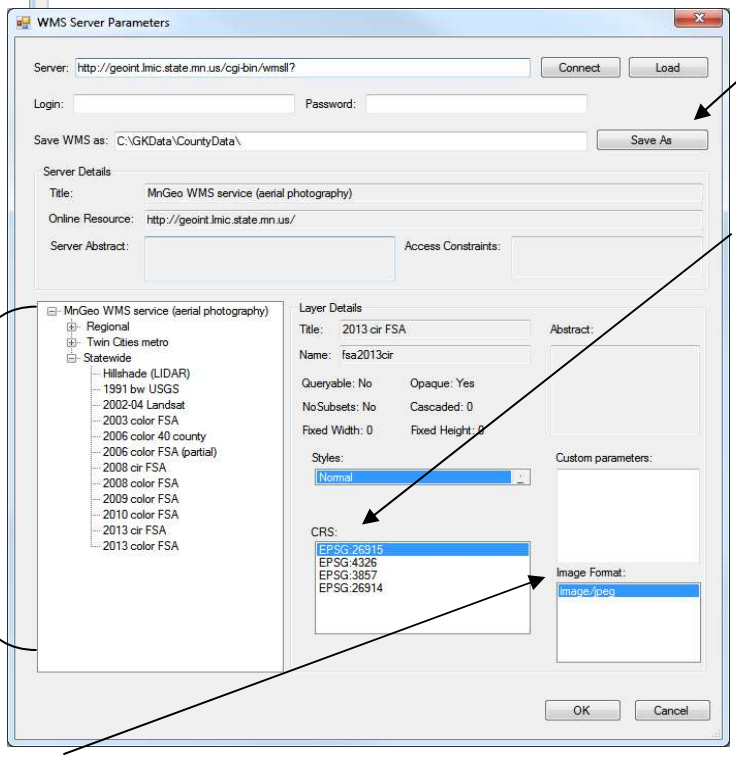
Here are some examples of WMS links:
MN: http://geoint.lmic.state.mn.us/cgi-bin/wmsll?
ND: http://ndgishub.nd.gov/ArcGIS/services/All_Imagery/MapServer/WMSServer?

Adding WMS Links:
From the "Web Layers" dropdown there will be an option to select "WMS." After it's selected a new window will open. This is where a link can be entered to connect to various WMS servers. The following will use the MN WMS link.





1. Enter the WMS server link.
2. Click "Connect." Once connected the rest of the window will populate with different options.
   - Some servers need special authentication which may require a login name and password. If this is the case enter it before connecting.



Some servers will have different options to select for background layers.

These layers vary with their geography. The MN example includes both statewide and regional WMS layers.

Common acronyms that are used with these layers are:

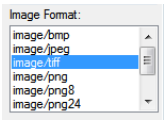
CIR: Color Inferred
Hillshade: Shaded Relief Map

WMS links can be saved and act as layers in the data tree. The "Save As" function can be used to save and rename WMS links.

CRS (Coordinate Reference System) is how the image is projected. By default the WMS layer will be projected in the UTM zone that is active. If the layer is not visible and should be it could be in an uncommon projection system and a different CRS can be selected.

EPSG:*26915* (*NAD83* UTM15N)
EPSG:*26914* (*NAD83* UTM14N)
EPSG:*32615* (*WGS84* UTM15N)
EPSG:4326 (WGS84)
EPSG:3857 (Web Mercator)

Image Format: Some WMS servers will have options to select different image formats. Some are better quality than others. By default if image/tiff is available it will automatically be selected (because of quality this format is always recommended, but not always available as an option)

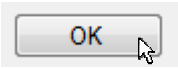


Example of different image formats from ND WMS server

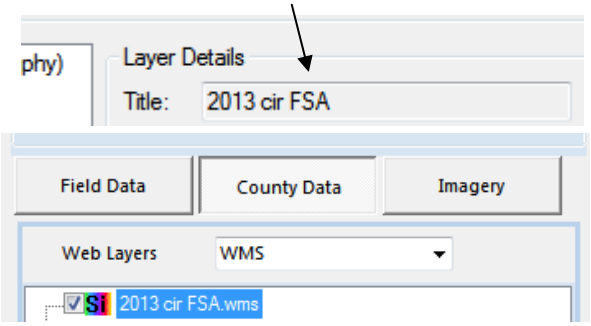
Using Web Based Background Layers—WMS Layers

Saving WMS Layers:

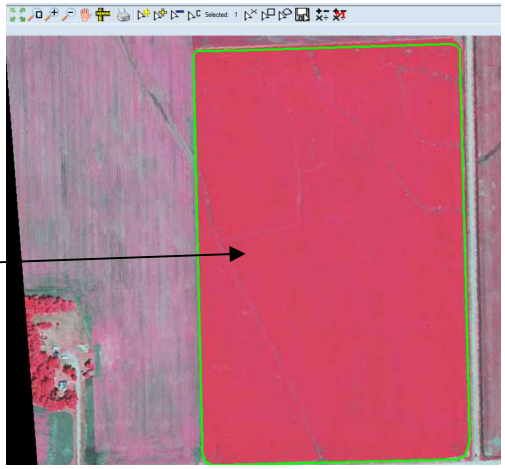
Once all the parameters have been entered in the WMS Server Parameters window click "OK."



A new layer will appear the data tree with the name that appears under "Title" in "Layer Details" of the WMS Server Parameters window. It will have the extension *.wms



2013 CIR (Color Inferred) image of the field from the MN WMS server.



Exporting WMS Layers:

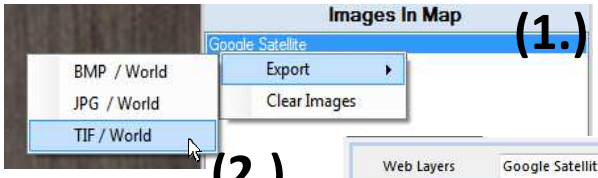
WMS layers can be exported, saved to the data tree, used as a background map, and an additional layer for management zone creation. There are three options for different file types (*.tif, *.bmp, *.jpg). During the export process additional options are given to change the image resolution.

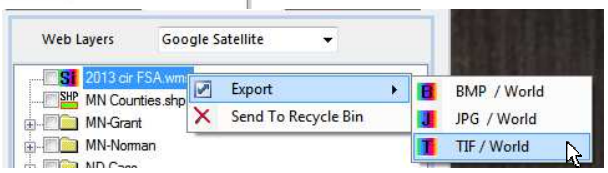
For the ADMS web layers that are only available in the "Web Layers" dropdown the export is only available under the "Layer Info" panel under "Images in Map."

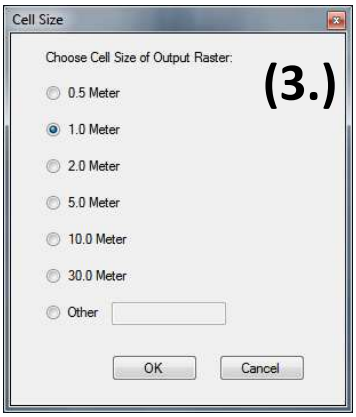
For any WMS links that are saved in the data tree the export is available in both the "Layer Info" panel and the layer in the data tree.

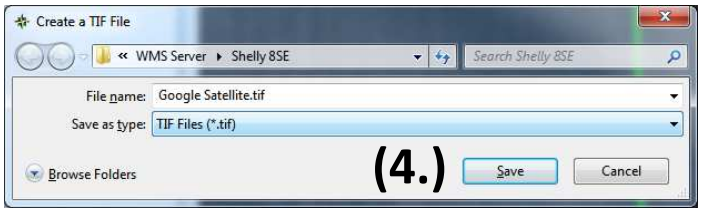
To access the export options:

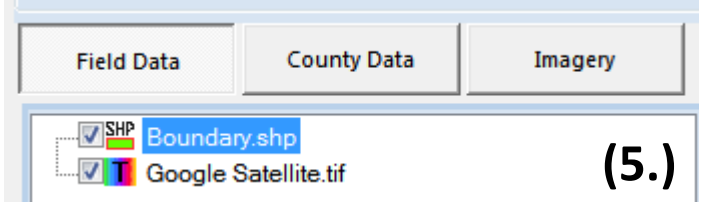
1. Right click on the layer name.
2. Select the image type to export.
3. Choose resolution.
4. Rename file if needed.
5. Refresh the data tree to make the new layer visible.











Creating Zones From Imagery—Manual Image Extraction

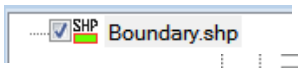
Introduction

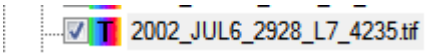
Images used for zone creation will have multiple bands of data that can be utilized to create management zones for precision applications. With the tools available in ADMS different types of images can be extracted in different ways. This can be extracting individual bands, or by using several vegetative indices.

Geo-referencing an Image

Often images; especially landsat will not be perfectly georeferenced. To update the position of an image a known reference layer is needed. Usually a boundary is a good option for this.

- Turn on the boundary.
- Turn on the image that needs to be aligned.



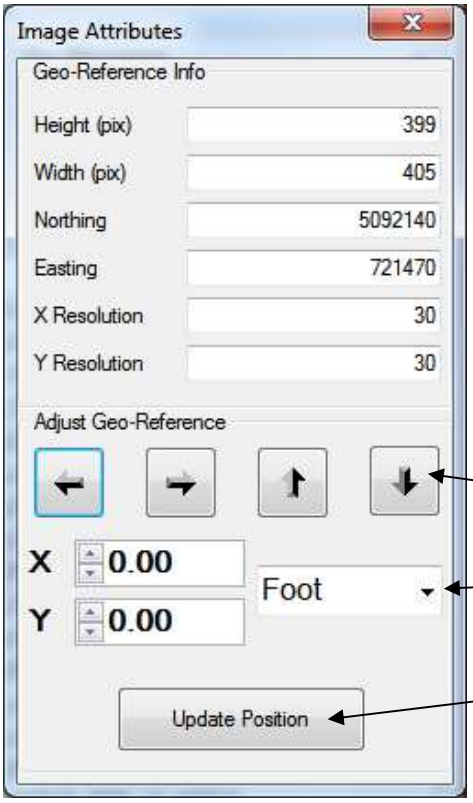


Notice the road (light blue/grey) is on the wrong side of the field boundary.

The image needs to be the Active Layer.

Layer: 2002_JUL6_2928_L7_4235.tif

On the bottom toolbar select the "Image Properties" button.



Use the arrows to adjust the image position.

From the dropdown menu different units can be selected. Each click with be equal to one unit. Additionally numbers can be entered manually into the boxes.

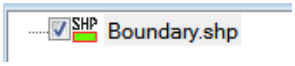
Once satisfied with the position of the image click "Update Position."

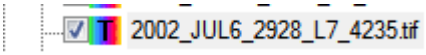
Creating Zones From Imagery—Manual Image Extraction

4 Band Images

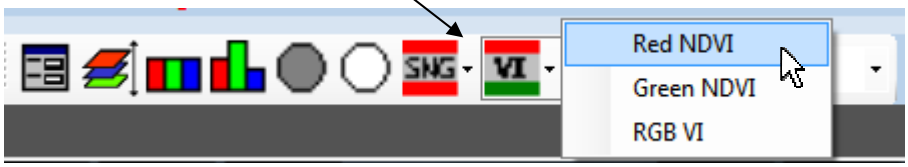
Four band images (Landsat) usually have the Red, Green, Blue, and an Inferred band in the image. The bands can be extracted out individually, or a vegetative index like NDVIR or NDVIG can be used.

Using NDVI

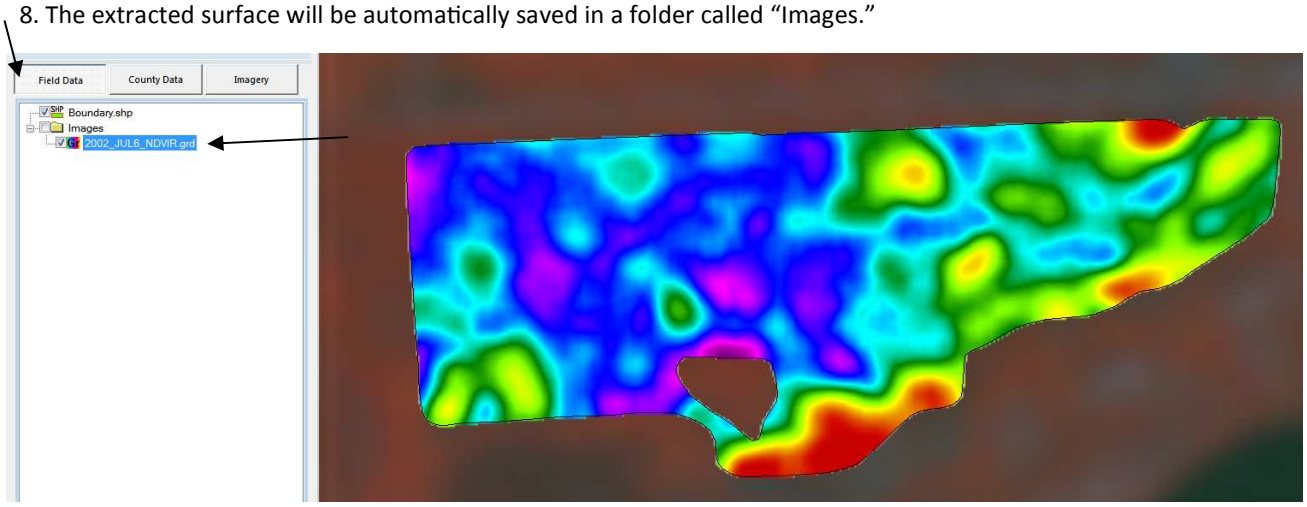
1. Turn on a field boundary. 

2. Select inside the boundary so it turns green.
3. Turn on the image to be extracted. 

   - *Make sure it is the active layer*
4. On the bottom toolbar select the Vegetative Index icon.



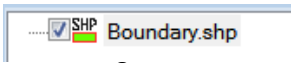
5. Choose either the Red NDVI or Green NDVI option
6. Go to "Field Data."
7. Refresh the data tree.
8. The extracted surface will be automatically saved in a folder called "Images."



3 Band Images

Three band images most commonly have the Red, Green, and Blue bands in the image. Each of the bands can be extracted out individually, or a visible vegetative index (Visible VI) can be used. By using the visible vegetation index it will enhance the vegetation that is in the field.

Using Visible VI

1. Turn on a field boundary. 

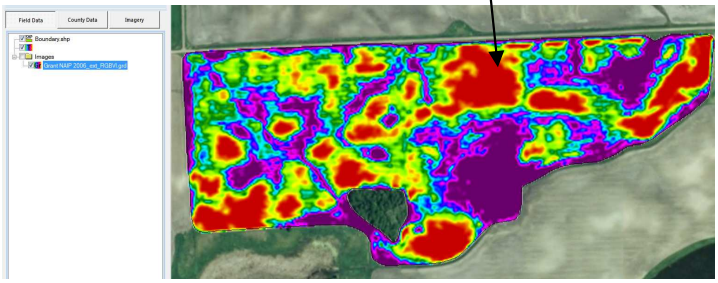
2. Select inside the boundary

RGB NAIP Image

Visible VI Extraction

3. Turn on the image to be extracted.
   - *Make sure it is the active layer*

4. On the bottom toolbar select the Vegetative Index icon.



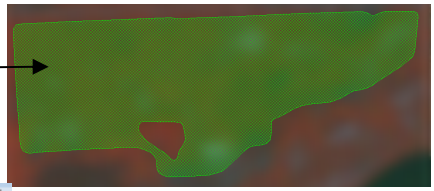
5. The extracted image will be saved to "Field Data" in a folder called images. It will have an ending of *filename*_RGBVI.grd

Creating Zones From Imagery—Manual Image Extraction

Individual Band Extraction

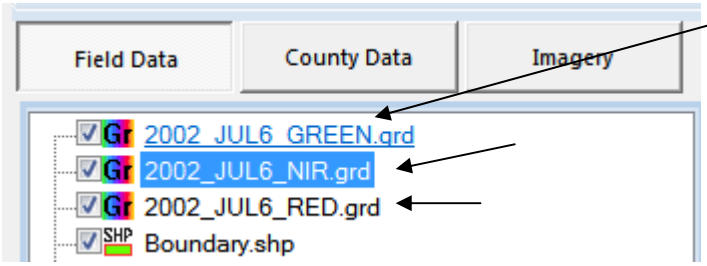
All multi band images can have each band extracted out individually. Commonly, the red, green, blue, and NIR bands will be used. By using the following process each band can be analyzed by itself.

1. Turn on the field boundary and select inside it.
2. Turn on the image to be extracted and make the active layer.
3. On the bottom toolbar select the single band extraction icon.



4. Select the band to extract.

The extracted surface will be saved under "Field Data" with the ending of whatever band was chosen.

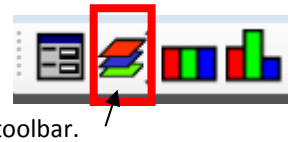


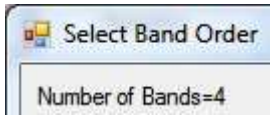
Individual Band Extraction—Changing Band Order

ADMS gives different options to change band orders of images. This can be useful for choosing how the images are extracted and which bands are available for extraction. When the band orders are changed the options in the single band extraction icon on the bottom toolbar dynamically change with it.

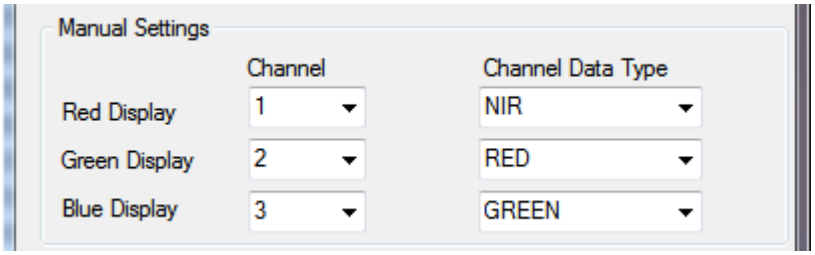
To access these options:

1. Make sure the desired image is the active layer.
2. Select the multi band layer display icon on the bottom toolbar.
3. The Select Band Order window will appear.

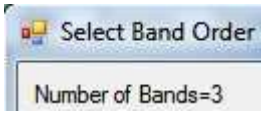




4 Band Image



4. The Channel and Channel Data Type will appear the same in the Manual Settings as it does on the SNG extraction button on the bottom toolbar.



3 Band Image